

Application No.: 10/540,443
Response Dated: March 5, 2007
Reply to Office Action Dated: December 5, 2006

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (currently amended) A method for delivering analgesia to an individual comprising ~~administering to the bloodstream of the individual an effective amount of an analgesic molecule which to be transported across the blood-brain barrier, wherein the analgesic molecule is a glycosylated peptide enkephalin, the glycosylation being a disaccharide sugar moiety having~~
 - (i) ~~a message sequence which binds to an opioid receptor comprising YGGFL, YtGFL, YsGFL, or YaGFL wherein the amino acid residue "t" is a D-threonine, "s" is a D-serine, and "a" is a D-alanine; and~~
 - (ii) ~~a transport sequence comprising an L-serine glycosylated through a βeta O-linkage with a disaccharide, wherein the glycosylated serine is positioned at the carboxyl terminus of the peptide and is attached to the message sequence of the peptide, and wherein the disaccharide selected from the group consisting of lactose, maltose and melibiose.~~
2. Canceled.
3. (currently amended) A method as claimed in claim 1 wherein the glycosylated enkephalin is selected from the group consisting of ~~the molecules designated MMP2200 and MD2005 MMP2005 in Table 2~~ YtGFLS (β-Lactose) CONH2 identified as MMP 2200; YtGFLS (β-Maltose) CONH2 identified as MMP 2230, and YtGFLS (β-Melibiose) CONH2 identified as MD 2005, wherein the "t" is a D-threonine and the S is an L-serine glycoside amide.

Application No.: 10/540,443
Response Dated: March 5, 2007
Reply to Office Action Dated: December 5, 2006

4. (currently amended) A method for modifying a peptide enkephalin having the amino acid sequence YtGFLS -NH2 to enable the molecule peptide to be transported across the blood-brain barrier, the method comprising the step of adding to glycosylating the serine residue of the peptide YtGFLS-NH2 with a disaccharide moiety selected from the group consisting of lactose, maltose or melibiose such that the peptide is modified as identified by any one of YtGFLS - (β-Lactose) CONH2, YtGFLS (β-Maltose) CONH2, and YtGFLS - (β-Melibiose) CONH2, wherein the "t" is a D-threonine and the S is an L-serine glycoside amide.

5. Canceled.

6. Canceled.

7. (currently amended) A pharmaceutical composition comprising a drug delivery package labeled for use as a human drug, the package containing a glycosylated enkephalin peptide capable of being transported across the blood-brain barrier, the glycosylation being a disaccharide, attached to the message region of the peptide having the formula YtGFLS (β-disaccharide)CONH2, YsGFLS (β-disaccharide) CONH2, or YaGFLS (β-disaccharide) CONH2, wherein the disaccharide is selected from the group consisting of lactose, maltose, and melibiose, and wherein the amino acid residue "t" is a D-threonine, "s" is a D-serine or "a" is a D-alanine, and wherein the S is an L-serine glycoside amide.

8. (currently amended) The A glycosylated enkephalin peptide compound having the formula YtGFLS (β-melibiose)CONH₂ YtGFLS- (β-melibiose)CONH2, wherein the compound is capable of transportation across the blood-brain barrier, and wherein the "t" is a D-threonine and the L-serine glycoside amide.

Application No.: 10/540,443
Response Dated: March 5, 2007
Reply to Office Action Dated: December 5, 2006

9. (currently amended) The A glycosylated enkephalin peptide compound comprising the formula YtGFLS- (β -lactose)CONH₂ YtGFLS(β -lactose)CONH₂ in solution and packaged for use as an injectable pharmaceutical wherein the compound is capable of transportation across the blood-brain barrier, and wherein the "t" is a D-threonine and the S is an L-serine glycoside amide.

10. (currently amended) The A glycosylated enkephalin peptide compound comprising the formula YtGFLS- (β -maltose)CONH₂ YtGFLS(β -maltose)CONH₂ in solution and packaged for use as an injectable pharmaceutical wherein the compound is capable of transportation across the blood-brain barrier, and wherein the "t" is a D-threonine and the S is an L-serine glycoside amide.

11. (New) A glycosylated enkephalin peptide compound comprising

(i) a message sequence which binds to an opioid receptor comprising YGGFL or YtGFL, YsGFL, and YaGFL, wherein "t" is a D-threonine, "s" is a D-serine or "a" is a D-alanine; and

(ii) a transport sequence comprising an L-serine glycosylated through a β O-linkage with a disaccharide, wherein the glycosylated serine is positioned at the carboxyl terminus of the peptide and attached to the message sequence of the peptide, wherein the disaccharide is selected from the group consisting of lactose, maltose or melibiose and wherein the compound is capable of transportation across the blood-brain barrier.

12. (New) A glycosylated enkephalin peptide compound comprising

(i) a message sequence which binds to an opioid receptor comprising YGGFL or YxGFL, wherein "x" is a D-amino acid; and

(ii) a transport sequence comprising an L-serine glycosylated through a β O-linkage with a disaccharide, wherein the glycosylated serine is positioned at the carboxyl terminus of the peptide and attached to the message sequence of the peptide, wherein the disaccharide is selected from the group consisting of lactose, maltose or melibiose and wherein the compound is capable of transportation across the blood-brain barrier.

Application No.: 10/540,443

Response Dated: March 5, 2007

Reply to Office Action Dated: December 5, 2006

13. (new) The method of Claim 12 wherein the D-amino acid is selected from the group consisting of D-threonine, D-serine, D-alanine, and D-valine.